UGC NET 22nd June 2026 Shift 2 Computer Science Memory Based Paper

Q1. Consider the following statements:
Statement I: LALR parser is more powerful than canonical LR Parser.
Statement II: SLR parser is more powerful than LALR.
Which of the following is correct?
(a) Statement I true and Statement II false
(b) Statement I false and Statement II true
(c) Both Statement I and Statement II false
(d) Both Statement I and Statement II true
Ans.(c)

Q2. Which of
(a) LL(1) Par
(b) LR(1) Par
(c) Recursive
(d) LALR(1)
Ans.(a)

Q3. Arrange rder of the rom the least powerful par
A. LR(0)
B. LR(1)
C. LALR(1)
D. LL(0)
E. SLR
Choose the c en
(a) LL(0) → L → LAL (1)
(b) SLR → LR (0) → L) → AL (1
(c) LL(0) → L SLR → LA (1) → L (1)
(d) LR(0) → L → LAL (1)
Ans.(c)

Q4. Consider
1. Every SLR(1) grammar is inherently unambiguous, but not every unambiguous grammar is SLR(1).
2. Constructing an LALR(1) parser by merging CLR(1) states can introduce new Shift-Reduce conflicts that did not exist in the CLR(1) parser.
3. A CLR(1) parsing table will always contain strictly more states than an LALR(1) parsing table for any given CFG.
4. If an LR(0) item set contains A → α and B → β, it results in a Reduce-Reduce conflict in an SLR(1) parser only if FOLLOW(A) ∩ FOLLOW(B) =/∅
Which of the given statements are correct?
(a) Only 1 and 2
(b) Only 1 and 4
(c) Only 1, 3 and 4
(d) Only 2 and 3
Ans.(b)

Q5. Choose the correct sequence to build the table of SLR(1):
1. Build LR(0) item automaton.
2. Compute FIRST/FOLLOW sets.
3. In ACTION, place reductions for items A\to \alpha. under tokens in FOLLOW(A).
4. Fill shifts/gotos from GOTO transitions.
(a) 2 → 1 → 4 → 3
(b) 1 → 2 → 4 → 3
(c) 1 → 2 → 3 → 4
(d) 2 → 1 → 3 → 4
Ans.(c)

Q6. Which of
(a) ALGOL
(b) C
(c) COBOL
(d) C++
Ans.(a)

Q7. Followin nguage p
LXI SP, EFFH
CALL 3000H
3000 H : LXI
PUSH PSW
SPHL
POP PSW
RET
On completio xecu on f S
(a) 3CF0 H
(b) 3CF8 H
(c) EFFD H
(d) EFFH
Ans.(b)

Q8. Match Lis

	List – I		List – II
A.	Handshaking	I.	I/O interface informs the CPU that device is ready transfer.
B.	Programmed I/O	II.	Requires two control signals working in opposite direction.
C.	Interrupt initiated I/O	III.	Has local memory & control large set of I/O devices.
D.	I/O processor	IV.	Required CPU to check the I/O flag & perform transfer.

Choose the correct option from those given below:
Match the columns.
(a) A-I, B-II, C-III, D-IV
(b) A-II, B-IV, C-III, D-I
(c) A-II, B-IV, C-I, D-III
(d) A-IV, B-III, C-II, D-I

Ans.(c)

Q9. What will be the output of the following C programming code?
int i, j;
for(i = 1; i < 5; i += 2)
for(j = 1; j < i; j += 2)
printf("%d ", j);
(a) 1
(b) 1 2
(c) 1 3
(d) 1 1 3
Ans.(a)

Q10. Which c
A. A construc
B. A construc
C. A construc
D. A construc
Choose the c low:
(a) B, C, D onl
(b) B, C only
(c) A, B, C onl
(d) A, B only
Ans.(d)

Q11. Which c CANN ded b
(a) Addition
(b) Function Arr
(c) Scope Res and M ber Acce s .
(d) Assignme B ft S ft <
Ans.(c)

Q12. Conside
A. The final si dual in itself.
B. If either th o has a finite optimal solution.
C. If either problem has an unbounded optimum solution, then the other problem has no feasible solution at all.
Which of the statements is (are) correct?
(a) only (A) and (B)
(b) only (A) and (C)
(c) only (B) and (C)
(d) (A), (B) and (C)
Ans.(d)

Q13. Consider the following statements about page replacement policies:
P: Optimal page replacement is theoretical because it requires future knowledge.
Q: LRU approximates Optimal by replacing the page least recently used.
R: FIFO may suffer from Belady's Anomaly.
Which statements are correct?
(a) Only P and Q
(b) Only Q and R
(c) Only P and R
(d) P, Q, and R
Ans.(d)

Q14. Which c t one tuple in the relation s
(a) ∀
(b) ∃
(c) σ
(d) π
Ans.(b)

Q15. If mem d 11 ns w) ns memory, then what is
(a) 93%
(b) 90%
(c) 88%
(d) None of t
Ans.(b)

Q16. Match L List II:

List I: Proce	be List II: Fu onal C racteristic
A. Compiler	I. Trans lates ass mbly lan uage in machine
B. Interpret	
C. Assemble	
D. Linker	

Choose the c
(a) A-II, B-III, C-IV, D-I
(b) A-I, B-II, C-IV, D-III
(c) A-III, B-IV, C-II, D-I
(d) A-II, B-III, C-I, D-IV
Ans.(d)

Q17. Match List – I with List – II:

	List – I		List – II
A.	Data Link Layer	I.	True end-to-end layer
B.	Network Layer	II.	Token Management
C.	Transport Layer	III.	Produce billing information
D.	Session Layer	IV.	Piggybacking

Choose the correct answer from the options given below:
Match the columns.
(a) A - IV, B - III, C - I, D – II
(b) A - IV, B - II, C - I, D – III
(c) A - II, B - III, C - I, D – IV
(d) A - IV, B -
Ans.(a)

Q18. Match L

List - I		List - II	
A.	Physical layer	I.	Routing of the signals divide the outgoing message into packets, to act as network controller for routing data.
B.	Data link layer	II.	Make and break connections, define voltages and data rates, convert data bits into electrical signal.
C.	Network layer	III.	Synchronization, error detection and correction. To assemble outgoing message into frames.
D.	Presentation layer	IV.	It works as a translating layer.

Choose the c ven b
Match the co
(a) A-IV, B-III
(b) A-II, B-III
(c) A-IV, B-III
(d) A-II, B-III
Ans.(d)

Q19. Match L

	List – I		
A.	TCP		
B.	UDP		
C.	SCTP	III.	Multistreaming support
D.	Sliding Window	IV.	Flow control mechanism

Choose the correct answer:
(a) A-I, B-II, C-IV, D-III
(b) A-IV, B-II, C-I, D-III
(c) A-II, B-III, C-IV, D-I
(d) A-II, B-I, C-III, D-IV
Ans.(d)

Q20. Arrange the following protocol data units (PDUs) in the correct descending order as they are encapsulated traversing down the OSI model from the Application Layer to the Physical Layer:
A. Packet
B. Frame
C. Data (Message)
D. Bit
E. Segment
(a) C → A → E → B → D
(b) C → E → A → B → D
(c) E → C → A → B → D
(d) C → E → B → A → D
Ans.(b)

Q21. Arrange
1. Append r z
2. Divide by g
3. Replace th
4. Transmit r
(a) 1 → 2 → 3
(b) 2 → 1 → 3
(c) 1 → 3 → 2
(d) 2 → 3 → 1
Ans.(a)

Q22. Which c are t missi on?
(i) Noise and cause transmission errors.
(ii) Parity che only od per rs.
(iii) Cyclic Re y Check RC) is m re robus than pa t ck fo detecti g ors
(iv) In a perf mu tic ch nel wit no nterferen c tr er an l due to faulty hardware.
(a) Only (i) a
(b) Only (ii) a
(c) Only (i), (
(d) Only (ii),
Ans.(c)

Q23. Match the fundamental data structure listed in List-I with its primary application or structural characteristic defined in List-II:

	List – I		List – II
A.	Stack	I.	Recursion
B.	Queue	II.	Buffering
C.	Graph	III.	Cycle
D.	Tree	IV.	Hierarchical

(a) A-I, B-II, C-IV, D-III
(b) A-I, B-II, C-III, D-IV

(c) A-III, B-II, C-I, D-IV
(d) A-II, B-I, C-III, D-IV
Ans.(b)

Q24. Match the LIST – I with LIST – II.

	List – I (Algorithm)		List – II (Complexity)
A.	Insertion Sort	I.	$O(logn)$
B.	Binary Search	II.	$O(n^2)$
C.	Quick Sort	III.	$O(n-1)$
D.	Selection Sort	IV.	$O(nlogn)$

Choose the correct answer from the options given below:
Match the col
(a) A-III, B-I,
(b) A-II, B-III,
(c) A-I, B-II, C
(d) A-II, B-III,
Ans.(a)

Q25. A Boole $F(A, B, C,$ implification, which is the
(a) AD + BC
(b) BC + AD
(c) BD + ABC
(d) CD + A'B'
Ans.(d)

Q26. Which o wing operti s of a su group ?
I. H contains ity elem t of G
II. The invers element i H i so n
III. The produ ny t lem nts in H in H.
IV. H is a cycli
Select all that
(a) I, II and II
(b) I and IV
(c) II and IV
(d) All of the above
Ans.(a)

Q27. Given the following scenario for a single-layer perceptron with a threshold activation function:
· Inputs:
$x_1 = 0.5, x_2 = 0.2$
· Weights:
$w_1 = 0.4, w_2 = 0.7$
· Bias: b = -0.3

The perceptron uses a threshold activation function f(x) = 1 if $x \geq 0$ and f(x) = 0 otherwise. What is the output of the perceptron?
(a) 0.04
(b) 1
(c) 0.9
(d) 1.2
Ans.(a)

Q28. Every subgroup of an Abelian group is not -
(a) cyclic
(b) Abelian
(c) normal
(d) None of t
Ans.(a)

Q29. An abel
(a) exactly on
(b) exactly tw
(c) no subgro
(d) more thar
Ans.(d)

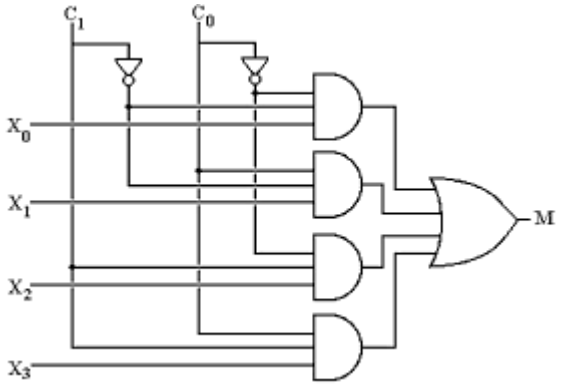
Q30. The har d 11
(a) 2
(b) 3
(c) 4
(d) 5
Ans.(b)

Q31. In a me re soning, a sea or abi 0.1. A lab test T returns pos nd the syste n uses:
· P(T | D) = 0.
· P(T | ¬D) = (
Using Bayes'
(a) 0.33
(b) 0.36
(c) 0.45
(d) 0.69
Ans.(a)

Q32. Arrange the disk scheduling algorithms in the correct order of their efficiency for accessing a specific disk request in a large disk queue:
1. SSTF
2. FCFS
3. SCAN
4. LOOK

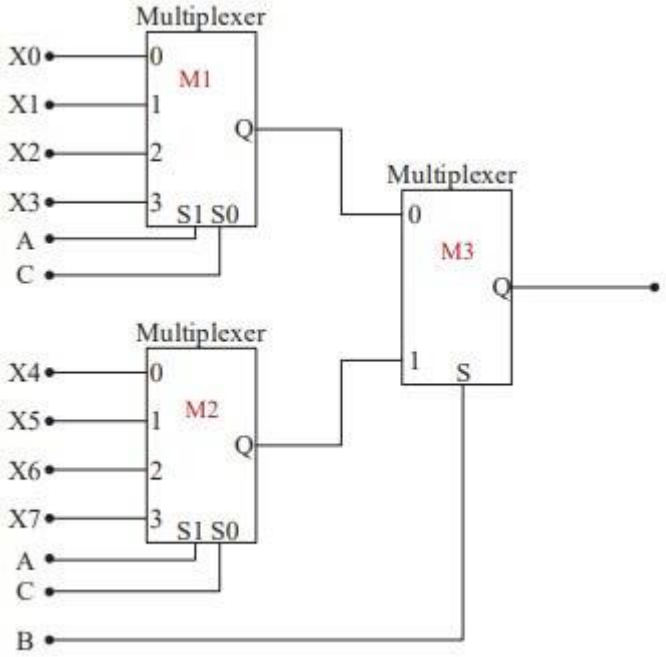
(a) 1 → 2 → 3 → 4
(b) 2 → 1 → 4 → 3
(c) 1 → 4 → 3 → 2
(d) 4 → 3 → 1 → 2
Ans.(c)

Q33. In the given 4-to-1 multiplexer, if c1 = 0 and c0 = 1 then the output M is _____



(a) X0
(b) X1
(c) X2
(d) X3
Ans.(b)

Q34. A Bool d using two 4-input m one 2-input multiplexer (X0-X of and could be connected to are connected to Boolean va A, B and C as shown below gram



Which one of the following set of values of (X0, X1, X2, X3, X4, X5, X6, X7) will realise the Boolean function $A^{-}+A^{-}\cdot C^{-}+A\cdot B^{-}\cdot CA^{-}+A^{-}\cdot C^{-}+A\cdot B^{-}\cdot C$?
(a) (1, 1, 0, 0, 1, 1, 1, 0)
(b) (1, 1, 0, 0, 1, 1, 0, 1)
(c) (1, 1, 0, 1, 1, 1, 0, 0)
(d) (0, 0, 1, 1, 0, 1, 1, 1)
Ans.(a)

Q35. Which of the following is NOT a phase in the Software Development Life Cycle (SDLC)?
(a) Requirement Analysis
(b) System Design
(c) Coding
(d) Marketing
Ans.(d)

Q36. Arrange development life cycle:
A. Integration
B. Unit testing
C. System Test
D. Acceptance
Choose the correct option below
(a) B, C, A, D
(b) B, A, C, D
(c) C, B, A, D
(d) C, B, D, A
Ans.(b)

Q37. Which following tuple relational calculus (TRC) expressions correctly retrieves tuples t from relation R such that the value of attribute A in t is greater than 10?
(a) {t | R(t) ∧ A(t) > 10}
(b) {t | t ∈ R ∧ A(t) > 10}
(c) {t | A(t) > 10}
(d) {t | ∀ A > 10}
Ans.(a)

Q38. Consider R (A, B, C, D, E) be relation with following dependencies:
$C \rightarrow F$,
$E \rightarrow A$,
$EC \rightarrow D$,
$A \rightarrow B$
Which of the following is a key for R?
(a) CD
(b) EC
(c) AE
(d) AC

Ans.(b)

Q39. Match the following:

	List – I (Concept)		List – II (Characteristics)
A.	Conflict Serializability	I.	Based on precedence graph with no cycles.
B.	View Serializability	II.	Same final state as some serial schedule.
C.	Recoverable Schedule	III.	A transaction commits only after others it depends on commit.
D.	Cascadeless Schedule	IV.	Prevents aborts from propagating.

A. A–II, B–I, C–III, D–IV
(b) A–I, B–II, C–III, D–IV
(c) A–II, B–IV, C–I, D–III
(d) A–IV, B–II
Ans.(b)

Q40. Using 'R) keys are:
(a) 7, 4
(b) 7, 1
(c) 7, 46
(d) 55, 1
Ans.(c)

Q41. A syste e the of ad application is 60% parallel , what is the maximu be achieved if the number o to 4?
(a) 1.55
(b) 1.82
(c) 2.50
(d) 1.40
Ans.(b)

Q42. Let R be t D such that:

$$E = \{(a, b) \mid (a, b) \in R \text{ and } (b, a) \in R\}$$

The relation
(a) a partial order
(b) a total order
(c) an equivalence relation
(d) none of the above
Ans.(c)

Q43. Match List - I with List - II.

	List – I (Software Process Model)		List – II (Description)
A.	Waterfall Model	I.	Software can be developed incrementally
B.	Evolutionary Model	II.	Requirement compromises are inevitable
C.	Component-based Software Engineering	III.	Explicit recognition of risk
D.	Spiral Development	IV.	Inflexible partitioning of the project into stages

Choose the correct answer from the options given below:
Match the columns.
(a) A – IV, B – I, C – III, D – II
(b) A – I, B – IV, C – II, D – III
(c) A – II, B – III, C – I, D – IV
(d) A – IV, B –
Ans.(d)

Q44. Match t

	List – I (Models)	
A.	Waterfa	he next
B.	Spiral M	ng
C.	V-Mode	evelopment
D.	Agile M	omer

A. A → I
(b) A → II, B – D –
(c) A → III, B , D →
(d) A → IV, B → I → I
Ans.(a)

Q45. If we w aspect ratio, what would b
(a) 420 Pixels
(b) 460 Pixels
(c) 480 Pixels
(d) 540 Pixels
Ans.(c)

Directions (46-50): Read the given passage and answer the following questions.
Software Engineering is a systematic approach to the development, maintenance and testing of software applications. This field emphasizes principles of engineering to create reliable and efficient software that meets user needs within specified timelines. The software development life cycle (SDLC) is a fundamental concept in software engineering, encompassing stages such as requirements gathering, system design, coding, testing, deployment, and maintenance. Various models, like the Waterfall, Agile, and Spiral models, offer different frameworks for managing these stages. Agile, for example, focuses on iterative development and continuous

feedback, enabling teams to adapt to changing requirements quickly. Quality assurance through testing is critical in software engineering, ensuring that software functions as expected and remains secure. Furthermore, software engineering practices emphasize the importance of documentation, version control, and project management to facilitate smooth development and maintenance processes. This discipline is integral in today's technology-driven world, supporting innovation and ensuring that software systems are reliable and effective.

Q46. What is the purpose of Software Engineering?
(a) To develop hardware
(b) To create reliable software systematically
(c) To manage databases
(d) To build network systems
Ans.(b)

Q47. Which
(a) Waterfall
(b) Agile
(c) Spiral
(d) Prototype
Ans.(b)

Q48. What d
(a) Software
(b) Secure De
(c) System De
(d) Software
Ans.(d)

Q49. Why is
(a) It accelera
(b) It helps v
(c) It reduces
(d) It avoids
Ans.(b)

Q50. What p
(a) Testing
(b) Documentation
(c) Version control
(d) Debugging
Ans.(c)